Volunteer Lake Assessment Program Individual Lake Reports

CLEMENT POND, HOPKINTON, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	1,530	**Max. Depth (m):**	15.5	**Flushing Rate (yr^{-1}):**	0.9
Surface Area (Ac.):	119	**Mean Depth (m):**	6.6	**P Retention Coef:**	0.63
Shore Length (m):	3,200	**Volume (m^3):**	3,153,500	**Elevation (ft):**	417

TROPHIC CLASSIFICATION

Year	Trophic class
1979	EUTROPHIC
1990	MESOTROPHIC

KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

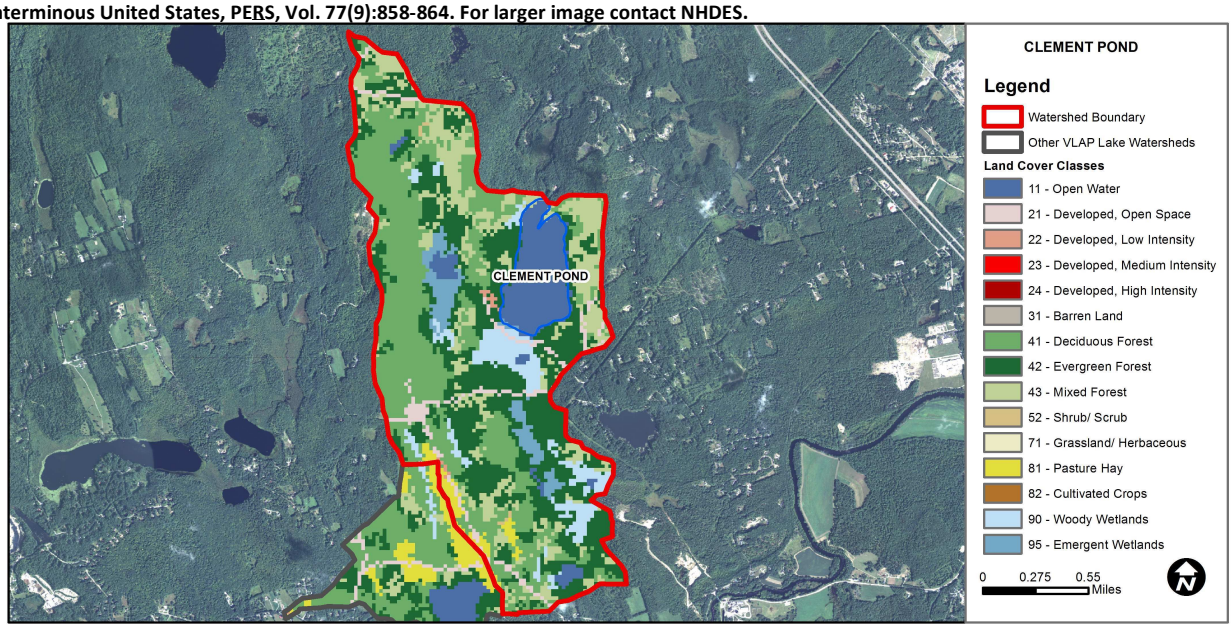
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	D.O. (% sat)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	Chlorophyll-a	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
Primary Contact Recreation	E. coli	Good	Geometric means < criteria; however at least 1 exceedance of the single sample criteria occurred.
	Chlorophyll-a	Very Good	At least 10 samples with 0 exceedances of criteria.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

CLEMENT POND - CAMP MERRIMAC BEACH	E. coli	Bad	>/=1 exceedance(s) of geometric mean criterion and/or >/=2 exceedances of single sample criterion, with 1 or more >2X criteria.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	8.73	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	3.14	Deciduous Forest	30.71	Pasture Hay	1.68
Developed-Low Intensity	0.25	Evergreen Forest	30.05	Cultivated Crops	0
Developed-Medium Intensity	0	Mixed Forest	15.8	Woody Wetlands	6.1
Developed-High Intensity	0	Shrub-Scrub	0.14	Emergent Wetlands	3.48

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
CLEMENT POND, HOPKINTON, NH
2012 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphic)*

- **CHLOROPHYLL-A:** Chlorophyll levels were slightly greater than has been measured in the past few years and slightly greater than the NH lake median. Historical trend analysis indicates chlorophyll levels fluctuate annually.
- **CONDUCTIVITY/CHLORIDE:** Conductivity was consistent with the NH Lake median and chloride levels were low.
- **TOTAL PHOSPHORUS:** Phosphorus levels were slightly elevated in the Metalimnion (middle water layer) and Hypolimnion (lower water layer). Metalimnetic phosphorus was elevated in August and turbidity was also elevated indicating a layer of algae may have been present. Algal cells contain phosphorus which could have contributed to the elevated phosphorus level. Hypolimnetic phosphorus was elevated in July and turbidity was also elevated indicating potential sediment contamination. Historical trend analysis indicates Epilimnetic (upper water layer) phosphorus levels fluctuate annually.
- **TRANSPARENCY:** Transparency was fairly average and historical trend analysis indicates a relatively stable transparency since monitoring began.
- **TURBIDITY:** Hypolimnetic turbidity was elevated in July potentially due to lake sediments, and Metalimnetic turbidity was elevated in August due to algal growth.
- **PH:** pH levels were sufficient to support aquatic life.
- **RECOMMENDED ACTIONS:** Keep an eye on the increased variability in chlorophyll levels and therefore algal growth. Maintain current sampling program and keep up the great work!

Dissolved Oxygen & Temperature Profile

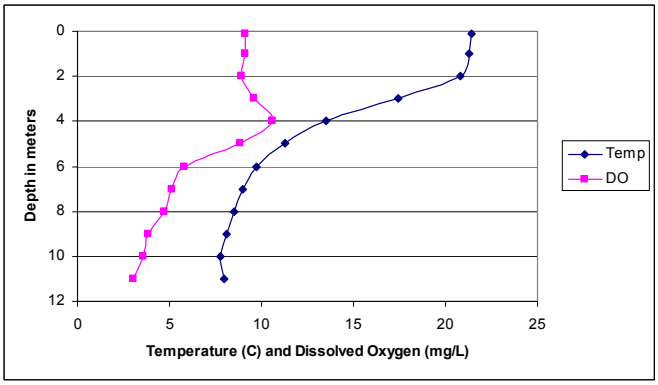


Table 1. 2012 Average Water Quality Data for CLEMENT POND

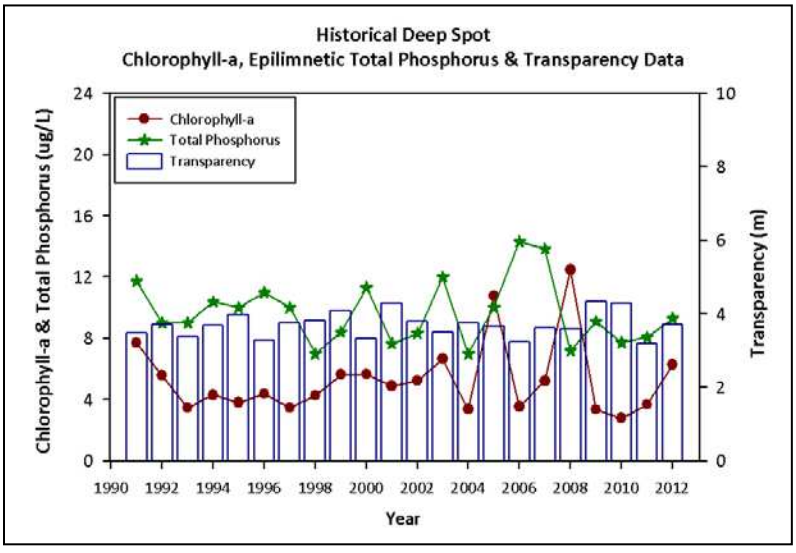
Station Name	Alk.	Chlor-a	Chloride	Cond.	Total P	Trans.		Turb.	pH
	mg/l	ug/l	mg/l	uS/cm	ug/l	m		ntu	
						NVS	VS		
Deep Epilimnion	7.5	6.29	4	44.5	9	3.72	4.00	0.67	7.02
Deep Metalimnion				46.3	30			1.67	6.86
Deep Hypolimnion				47.7	24			3.44	6.23
Hardy Brook Outlet			3	42.9	16			0.7	6.83
Hopkinton Inlet			6	62.0	24			1.26	6.26

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation
Chlorophyll-a	Variable	Data fluctuate annually, but are not significantly increasing or decreasing.
Transparency	Stable	Data not significantly increasing or decreasing.
Phosphorus (epilimnion)	Variable	Data fluctuate annually, but are not significantly increasing or decreasing.



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